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TREATMENT PLANT DEVELOPMENT GUIDELINES

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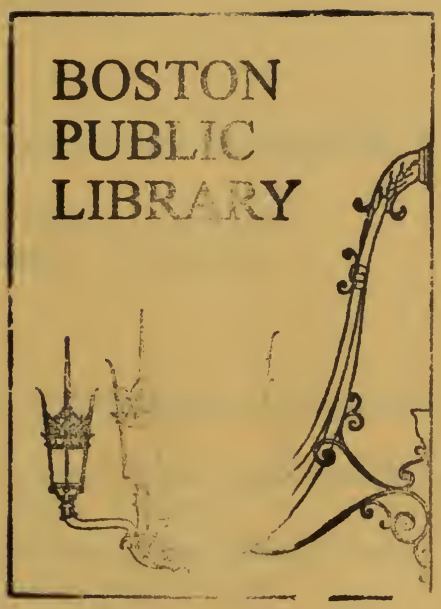
TREATMENT PLANT DEVELOPMENT GUIDELINES



mapc METROPOLITAN AREA PLANNING COUNCIL
44 School Street Boston, Massachusetts 02108

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November 1971

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I. INTRODUCTION

A. BACKGROUND

The Metropolitan Area Planning Council is the officially designated regional planning agency for the 101 communities of Metropolitan Boston. Since its creation in 1963, the Council has prepared plans for public water supply, sewerage and solid waste disposal systems, as well as for open space and recreation for the region.

This report has been prepared to assist public officials, engineering consultants and interested citizens in the region in the location and design of sewage treatment plants, especially as these facilities relate to the regional open space/ recreation system.

For specific details of the MAPC's plans, interested persons are referred to the list of Council publications which is appended to this report.

B. PURPOSE

As water quality improves, use of local ponds and streams is expected to increase. This improvement is dependent upon the central role that adequate sewage treatment plants play in making streams and ponds available for recreation. However, the concern for cleaner water should not overlook the importance of plant site selection and plant design. A site should be selected with the least possible disturbance to the natural factors, the ecological conditions, and the existing and projected land uses. The plant should be designed with minimum visual disturbance to the landscape and with adequate setback to allow for limited recreation along the water's edge.

The Council's open space plan envisages that ponds and streams will be available for water contact sports, sailing and canoeing, and that the stream-banks, with their flat gradient, will be available for hiking and bicycle trails in developed and undeveloped areas.

This memo suggests the site selection considerations and the plant designs that will be most compatible with the natural and man-made environments.

II. SITE SELECTION GUIDELINES*

A. POTENTIAL SITES - NATURAL CORRIDOR

Select a site whose natural features will not present excessive problems of drainage, run-off, slope, soil conditions, or geologic subsurface disturbances.

Select a site compatible with the Regional Open Space System and the community's master plan, where the interceptor right-of-way becomes part of the open space system.

Select a site which offers multiple use opportunities.

Select a site which offers the least disruption to natural drainage systems. Small streams and brooks have potential for recreation and conservation uses and it may be advantageous to maintain their flow.

B. POTENTIAL SITES - URBAN CORRIDOR

Select a site compatible with the existing land uses and comprehensive development plans.

Select a site which will least impair environmental and land use values.

Select a site which offers multiple use opportunities.

Select a site, where possible, in areas of major physical change or reconstruction, such as riverside urban renewal project areas or proposed transportation corridors.

Consider when selecting a site the possibility of the interceptor right-of-way enhancing pedestrian access to the riverfront.

III. SITE DEVELOPMENT GUIDELINES*

A. ORIENTATION AND LOCATION OF PLANT FACILITIES

Plant layout should respect the existing site character, topography, site features and shoreline.

Site development should take advantage of the existing site topography to diminish the visual impact of the facility within the landscape.

The long axis of large or tall plant structures should be laid out to avoid blocking views and access and should be parallel to significant lines of sight.

Plant structures should be located as far back from the water edge as possible to offer opportunities for locating other types of compatible land uses, particularly recreation and open space. The setback should be great enough so that the plant does not dominate the river's edge.

Where appropriate the plant should consider a boat launching facility at the river's edge for recreational use.

Site development should alter existing natural stabilized site contours and drainage patterns as little as possible.

Plant layout should be flexible and adjust to existing site conditions. Rigid layouts can require expensive and damaging earth moving.

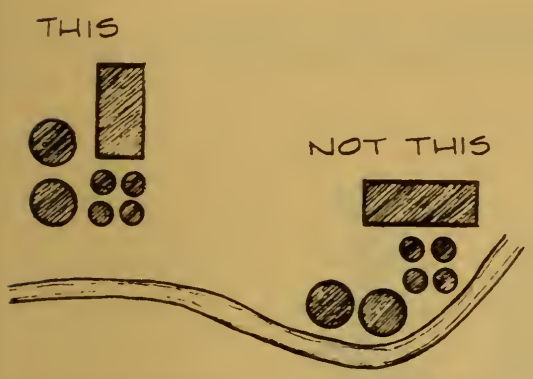
The area needed for future plant expansion should also be planned at this time to avoid evolution of the sprawled unordered treatment facility in undeveloped areas or conflicts with the surrounding community in developed urban areas.

Consider multiple use opportunities where appropriate of the following compatible facilities:

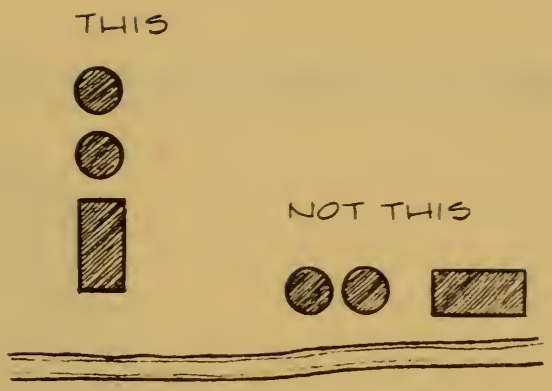
Water treatment plants
Water storage facilities

Municipal incineration facilities
Public works garages and equipment storage yards
Power generation stations
Power transfer stations
Transportation centers
Recreational open space
Water-based recreation uses

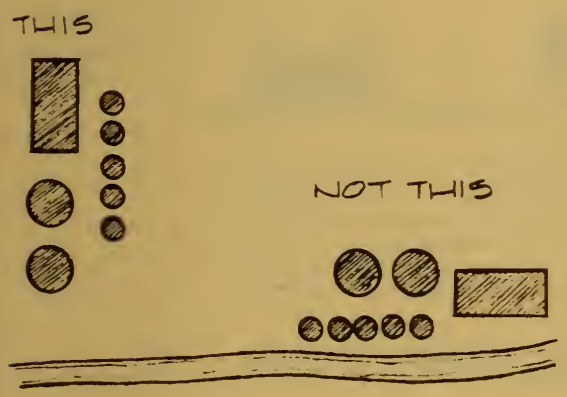
DEVELOPMENT GUIDELINES



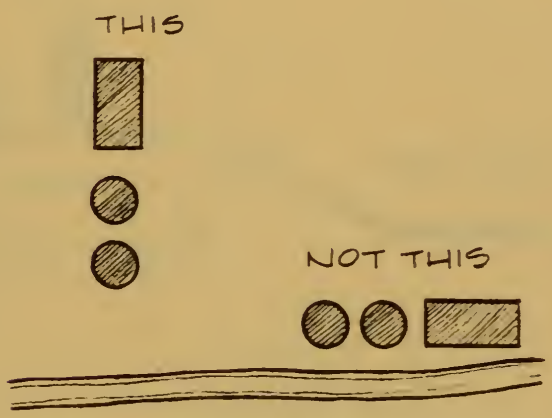
AVOID PROMINENT SITES



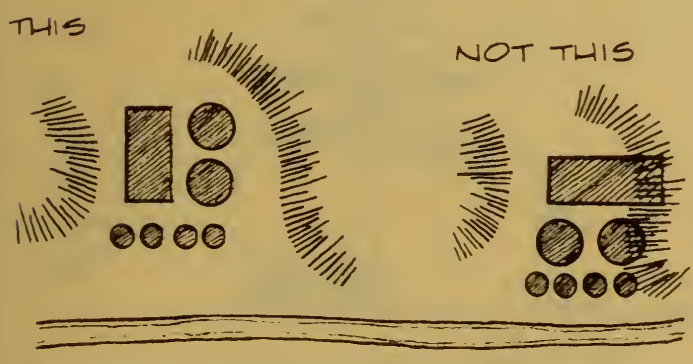
AVOID BLOCKING VIEWS



MINIMIZE LENGTH OF RIVER FRONT DISRUPTION



OFFER OPEN SPACE ALONG THE WATER EDGE



AVOID CONFLICT WITH NATURAL TOPOGRAPHY

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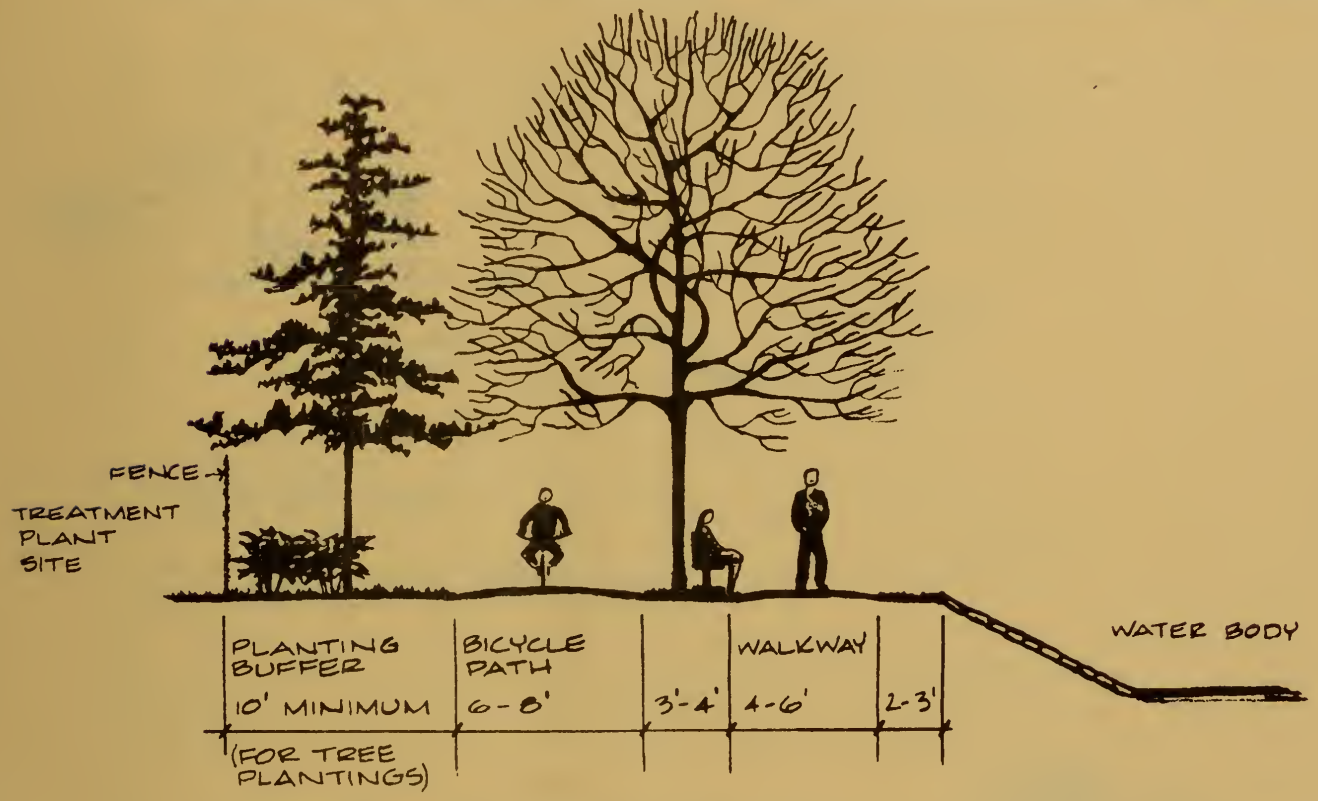
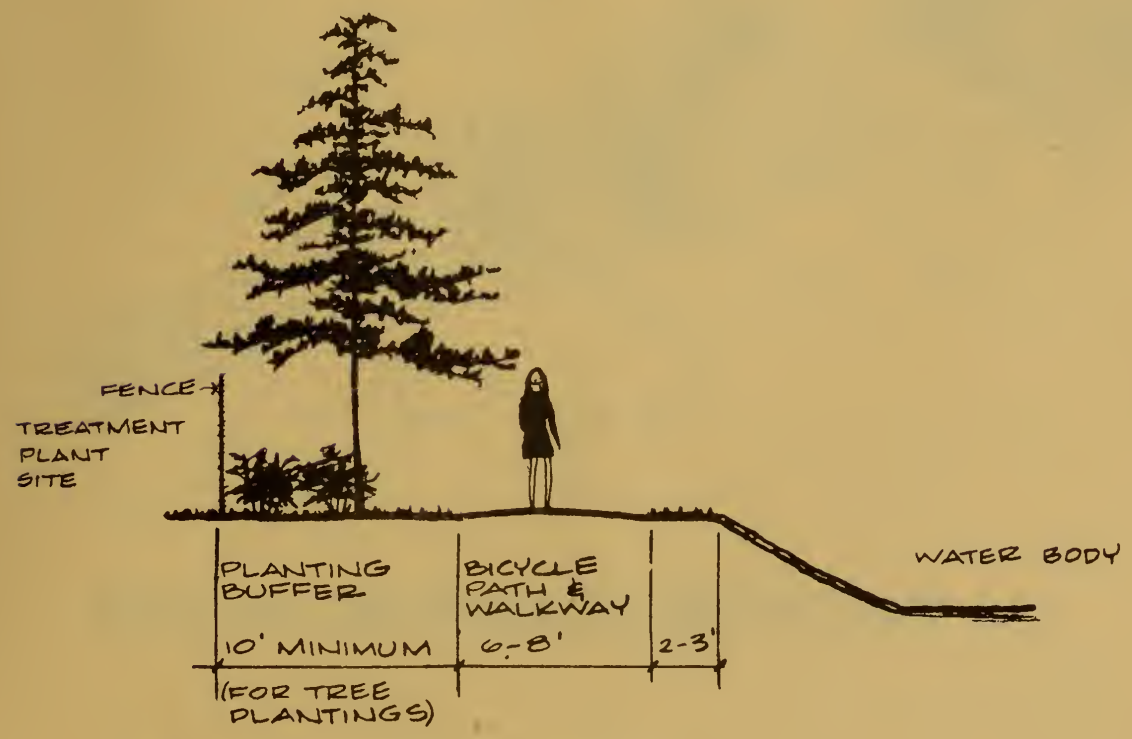
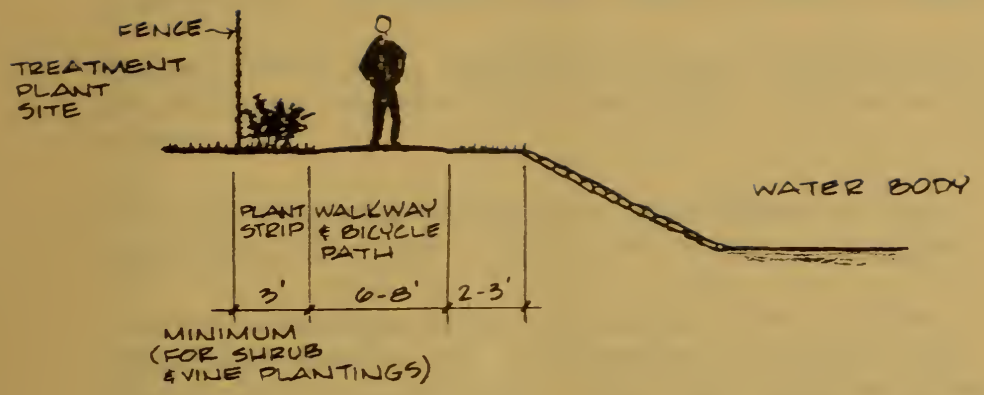
SETBACK ALTERNATIVES FROM WATER'S EDGE



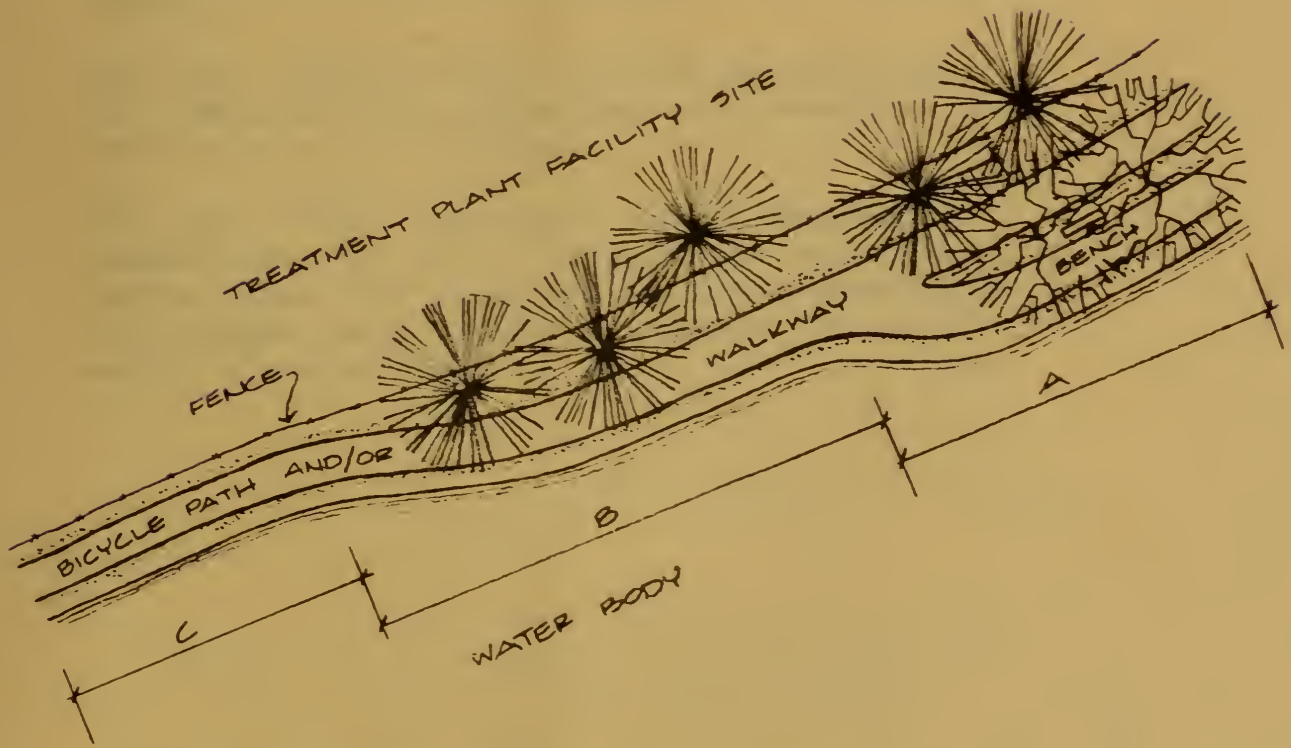
A. PREFERRED SETBACK



B. INTERMEDIATE SETBACK



C. MINIMUM SETBACK



PLAN OF SETBACK ALTERNATIVES

B. PLANT DESIGN*

The final stage in the design process deals with the structure and form of the treatment plant.

Let the mechanical functions of the plant determine the design of the structure rather than impose a particular architectural style to mask functions.

Expose mechanical components where appropriate in order to express the functional nature of the structure.

Aim for a visual-sculptural statement in the landscape, through a positive design solution.

Public buildings as a representative of the community should set an example in design and construction technique. This has been an accepted governmental role in the past and should not be dismissed by contemporary officials.

The plant should provide a pleasant environment for employees and provision should be made for public visits.

The plant should provide visitor parking both for visitors to the plant and to recreation areas that may be adjacent.

The plant should complement other structures planned near the site. If part of a waterfront renewal plan, all buildings should be considered as a single design problem, although not necessarily a single style.

C. LANDSCAPING GUIDELINES

Landscaping is used to visually relate the treatment facility with the surrounding area, to diminish the impact of structures and to conceal as much as possible unsightly areas of the facility.

The planting materials used and their placements should reflect the character of the area. In an undeveloped area, plants should be used that are of the same forest community. The trees and shrubs should be planted in a naturalistic manner, reflecting, and in time becoming part of the surrounding plant community.

The plant materials should reflect the orientation, exposure to wind and sun, of the facility and of the public areas and trails. Cold northwest winds prevail in New England in the winter months clumps of evergreen trees provide excellent wind protection when planted where there is exposure to the northwest winds. The warm sun from the south needs screening in the summer and exposure in the winter. Deciduous trees can provide summer shade when in leaf and allow the warmth of winter sun when not in leaf.

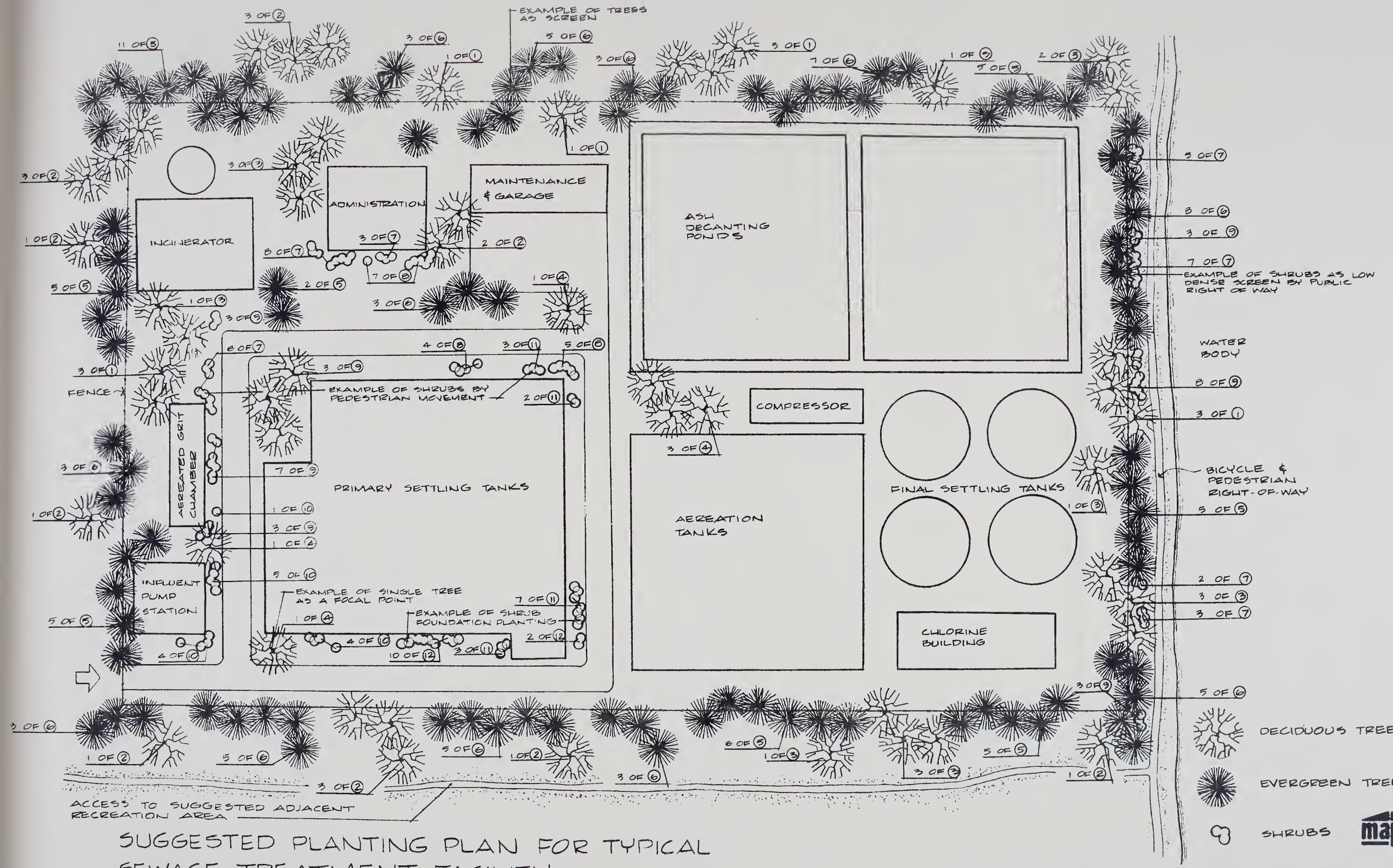
In a developed area, plants should be used that are the same or similar to those already in the area. The plants used should be those recommended for withstanding urban conditions. Vegetation in the city environment has a difficult time surviving due to poor soil, insufficient light, insufficient water, excessive smoke and gas fumes, and carbon monoxide gas from automobile traffic. Evergreen plants in particular have a difficult time surviving. Dust and soot encrust their leaves and restrict the normal entrance of oxygen. Deciduous trees replace their leaves more frequently, somewhat lessening this problem.

The plant materials should be chosen and located in consideration of each plant's single form and of the total form of all the plants together. The immediate view and the distant view are equally important. Shrubs and small trees should be used where the pattern of movement is largely pedestrian and where a low dense screen is needed. Shrub plantings should be concentrated around the buildings, along paths and any public right-of-way, and around fences creating a pedestrian-level dense screen.

A tree should be used as a single accent plant when its form, foliage, flower and/or fruit is particularly interesting. An accent or specimen plant is unobstructed by other plants or buildings. Trees should be used in large groupings to create a constant visual pattern uniting the separate facilities of the treatment plant with each other and with the surrounding area. Large groupings of trees should be used around the facility as a screen material visible from a distant view.

In addition to shrubs and trees, vines that will climb and cling to fences are useful as a screen material. All plants should be relatively pest free, hardy in New England, be able to withstand urban conditions where applicable and be rapid growing. To create a uniformity in design, a few well chosen varieties of plants should be used rather than several varieties.

These landscaping guidelines apply as well to existing facilities as to new facilities.



SUGGESTED PLANTING PLAN FOR TYPICAL SEWAGE TREATMENT FACILITY

SCALE : 1" = 100'

EACH NUMBER ①-⑫, INDICATES A DIFFERENT PLANT SPECIES. THIS IS TO ILLUSTRATE THAT A FEW WELL CHOSEN VARIETIES ARE PREFERRED. PLANTS OF THE SAME SPECIES ARE GROUPED FOR STRONGER IMPACT SINGLE PLANTS WOULD BE THOSE OF OUTSTANDING CHARACTERISTICS: FORM, FOLIAGE, FLOWERS AND/OR FRUIT.

ELEVATION OF SUGGESTED PLANTING AROUND FENCE
BY BICYCLE AND PEDESTRIAN RIGHT-OF-WAY

SCALE: 1" = 16'
20± YEAR GROWTH

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RECOMMENDED PLANTS

TREES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	FORM	FOLIAGE	FLOWERS	FRUIT - FOOD FOR WILDLIFE	AUTUMN COLOR	SPECIAL CHARACTERISTICS	SPECIAL CARE	REC. SPACING	NATIVE	CITY USE
ABIES CONCOLOR	WHITE FIR	100-125'	PYRAMIDAL, NARROW, HORIZONTAL BRANCHING	EVERGREEN, BLUISH-GREEN LONG NEEDLES	—	—	—	WITHSTANDS HEAT & DROUGHT; RAPID GROWTH FOR EVERGREENS, 1½' A YEAR; GOOD COLOR CONTRAST WITH WHITE PINE		40-50' O.C.	NO	YES
ACER CAMPESTRE	HEDGE MAPLE	20-25'	ROUNDED, DENSE	DECIDUOUS	—	—	YELLOW	GOOD AS CLIPPED HEDGE & SCREEN PLANT; LITTLE ATTENTION		15-25' O.C.	NO	YES
ACER GINNALA	AMUR MAPLE	20-25'	UPRIGHT, ROUNDED, DENSE	DECIDUOUS	—	WINGED KEYS, RED & CONSPICUOUS	—	GOOD AS A SPECIMEN TREE & SCREEN PLANT; LITTLE ATTENTION		15-25' O.C.	NO	NO
ACER PLATANOIDES	NORWAY MAPLE	60-80'	ROUNDED, DENSE	DECIDUOUS	SMALL, YELLOW, APRIL	—	BRIGHT YELLOW	RAPID GROWTH; GOOD QUICK SCREEN; VERY ORNAMENTAL		40-50' O.C.	NO	YES
ACER RUBRUM	RED OR SWAMP MAPLE	50-75'	ROUNDED, DENSE	DECIDUOUS	SMALL, PROFUSE, RED; APRIL	WINGED KEYS, BRIGHT RED	BRILLANT RED	FAST GROWING; BLOOM A FIRST SIGN OF SPRING		30-40' O.C.	YES	NO
ACER SACCHARUM	SUGAR OR ROCK MAPLE	70-100'	OVAL, DENSE	DECIDUOUS	—	—	YELLOW TO RED	ONE OF BEST NATIVE SHADE TREES; STURDY; VERY COLORFUL IN FALL		40-50' O.C.	YES	NO
BETULA LENTA	SWEET BIRCH	50-70'	PYRAMIDAL; DENSE	DECIDUOUS	—	—	GOLDEN YELLOW	GOOD AS SPECIMEN TREE, ONE OF BEST BIRCHES FOR FALL COLOR; CHERRYLIKE BARK	BIRCH LEAF MINOR, SPRAYING	25-35' O.C.	YES	NO
CORNUS FLORDIA	FLOWERING DOGWOOD	20-25'	HORIZONTAL BRANCHING; DENSE	DECIDUOUS	BRACTS; WHITE; MAY	BRIGHT RED BERRIES; FALL	SCARLET	VERY ORNAMENTAL; INTEREST ALL SEASONS; GOOD AS SPECIMEN OR MASSING		15-25' O.C.	YES	NO
CORNUS MAS	CORNELIAN CHERRY	15-20'	ROUNDED, DENSE, SHRUBLIKE	DECIDUOUS	YELLOW, SMALL; APRIL	SCARLET; EARLY FALL	RED	STURDY & VIGOROUS; GOOD AS SPECIMEN PLANT; SEVERAL PLANTS MAKE A GOOD HEDGE		10-15' O.C	NO	NO
FAGUS GRANDIFLORA	AMERICAN BEECH	50-75'	PYRAMIDAL; DENSE	DECIDUOUS	—	—	GOLDEN-BRONZE	ORNAMENTAL ALL SEASONS, FORM, FOLIAGE, LIGHT GRAY BARK, GOOD AS SPECIMEN TREE		25-35' O.C	YES	NO
FRAXINUS AMERICANA	WHITE ASH	70-80'	ERECT, ROUND TOP, DENSE	DECIDUOUS	—	—	DEEP PURPLE OR YELLOW	REPRODUCED RAPIDLY FROM SEED & RESEEDS ITSELF; VIGOROUS GROWTH; GROWS IN ANY SOIL	OYSTER SCALE; SPRAYING	25-35' O.C.	YES	YES
FRAXINUS PENNSYLVANICA LANCEOLATA	GREEN ASH	40-50'	ROUNDED; DENSE	DECIDUOUS	—	—	YELLOW	REPRODUCED RAPIDLY FROM SEED & RESEEDS ITSELF; VIGOROUS GROWTH; GROWS IN ANY SOIL	OYSTER SCALE; SPRAYING	20-30' O.C.	YES	YES
MAGNOLIA STELLATA	STAR MAGNOLIA	20-25'	MOUNDED, SHRUBLIKE, DENSE	DECIDUOUS	DOUBLE, WHITE, 3" DIAMETER; FRAGRANT; APRIL	CUCUMBER-LIKE PODS 2" LONG; FALL	BRONZE TO YELLOW	HARDIEST & ONE OF THE MOST ORNAMENTAL OF THE MAGNOLIAS; BEST USED AS A SPECIMEN PLANT		15-25' O.C	NO	YES
MALUS (VARIETIES)	CRAB APPLE	VARIES 15-35'	VARIES; SMALL TREES; SHRUBLIKE	DECIDUOUS	VARIES, WHITE TO PURPLISH-RED; FRAGRANT	VARIES, PEA SIZE - 2" DIA. RED TO YELLOW; FALL	NOT USUAL	ORNAMENTAL FLOWERING & FRUIT TREE; FRUITS ATTRACTIVE TO BIRDS; FRUITS LAST ALL WINTER	SCALE INFESTATIONS & BORERS, SPRAYING; SOME PRUNING	15-25' O.C.	NO	YES
PINUS NIGRA	AUSTRIAN PINE	60-80'	PYRAMIDAL; DENSE; WIDE SPREADING	EVERGREEN; DARK GREEN NEEDLES				FAST GROWING; GOOD WINDBREAK OR SCREEN, GOOD AS A SPECIMEN PLANT		30-40' O.C	NO	NO
PINUS STROBUS	EASTERN WHITE PINE	80-100'	ROUNDED OR PYRAMIDAL	EVERGREEN NEEDLES SOFT GREEN				SOFT GREEN OF FOLIAGE ALL YEAR MAKES THIS TREE ONE OF MOST VALUABLE FOR BACKGROUND FOLIAGE IN LANDSCAPE PLANTINGS; EASILY TRANSPLANTED; RAPID GROWTH, 10' IN 10 YEARS		30-40' O.C.	YES	NO
POPULUS NIGRA ITALICA	LOMBARDY POPLAR	75-100'	COLUMNAR; DENSE	DECIDUOUS				USE ONLY FOR QUICK GROWING SCREEN; AS MATURES, OFTEN ACQUIRES CANKOR DISEASE; NO CURE; DESTROYS SYMMETRY		15-25' O.C	NC	NO
QUERCUS BOREALIS	RED OAK	60-80'	BROAD, ROUND TOP, DENSE	DECIDUOUS			RED	RAPID GROWTH; ORNAMENTAL; TRANSPLANTS EASILY		30-40' O.C	YES	YES
TILIA (VARIETIES)	LINDEN	70-90'	VARIES	DECIDUOUS	SMALL; YELLOWISH			VERY SERVICEABLE FOLIAGE TREES; GOOD AS A SPECIMEN PLANT & STREET TREE	LEAF EATING INSECTS, SPRAYING	30-40' O.C.	NO	YES
TSUGA CANADENSIS	CANADA HEMLOCK	60-100'	HORIZONTAL DROOPING BRANCHES, PYRAMIDAL	EVERGREEN; NEEDLELIKE; DENSE				ORNAMENTAL AS SPECIMEN OR GROUPED AS BACKGROUND OR SCREEN; MANY FORMS ARE AVAILABLE AS TREES & SHRUBS; MAY BE PRUNED FOR HEDGE		30-40' O.C.	YES	NO
TSUGA CAROLINIANA	CAROLINA HEMLOCK	60-100'	COMPACT, DROOPING BRANCHES; PYRAMIDAL							30-40' O.C.	NO	YES

SHRUBS

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	FORM	FOLIAGE	FLOWERS	FRUIT - FOOD FOR WILDLIFE	AUTUMN COLOR	SPECIAL CHARACTERISTICS	SPECIAL CARE	REC. SPACING	NATIVE	CITY USE
ACANTHOPANAX SIEBOLDIANUS	—	6-8'	BUSHY, DENSE	DECIDUOUS	INCONSPICUOUS	INCONSPICUOUS	NONE	LEAVES REMAIN WELL INTO FALL; GROWS WELL IN SHADE & DRY SANDY SOILS	—	3' O.C.	NO	YES
ARONIA ARBUTIFOLIA	RED CHOKEBERRY	6-8'	—	DECIDUOUS	WHITE OR REDDISH; MAY	RED BERRIES; FALL	RED	DEPENDABLE IN ANY SOIL; LARGE NUMBER OF BERRIES; ORNAMENTAL ALL SEASONS; GROWS WELL IN SHADE	—	3½' O.C.	YES	YES
ARONIA MELANOCARPA	BLACK CHOKEBERRY	1½-3'	—	DECIDUOUS	WHITE; MAY	BLACK BERRIES; FALL	RED	GOOD FOR NATURALISTIC PLANTINGS EDGE OF WOODLANDS; GROWS WELL IN SHADE	—	3½' O.C	YES	YES
BERBERIS THUNBERGI	JAPANESE BARBERRY	4-6'	DENSE; THORNY	DECIDUOUS	YELLOW; MAY	RED BERRIES; FALL & WINTER	SCARLET	ORNAMENTAL ALL SEASONS; GROWS IN ALMOST ANY SOIL; WITHSTANDS DRY CONDITIONS & SHADE	—	2½-3' O.C.	YES	NO
CHAENOMELES (VARIETIES)	FLOWERING QUINCE	3-5'	DENSE; THORNY	DECIDUOUS	ORANGE; RED, PINK OR WHITE; MAY	LARGE GREEN APPLELIKE; FALL	—	BRIGHT COLORED FLOWERS APPEARING BEFORE LEAVES; GROWS IN ANY GOOD SOIL	OCCASIONAL RENEWAL PRUNING	4' O.C	NO	YES
FORSYTHIA (VARIETIES)	FORSYTHIA	2-9'	ARCHING OR TRAILING BRANCHES	DECIDUOUS	YELLOW; MARCH, APRIL	—	—	EARLY BRIGHT YELLOW BLOSSOMS BEFORE LEAVES; EASY TO GROW IN ALMOST ANY SOIL; VIGOROUS GROWTH	RENEWAL PRUNING EACH YEAR	3-5' O.C.	NO	YES
HAMAMELIS VIRGINIANA	COMMON WITCHHAZEL	10-12'	UPRIGHT; OPEN	DECIDUOUS	YELLOW; OCTOBER	—	YELLOW	VALUED FOR FALL FLOWERS, BRIGHT YELLOW COLOR; GROWS WELL IN SHADE	—	6' O.C.	YES	YES
HAMAMELIS VERNALIS	VERNAL WITCHHAZEL	8-10'	DENSE	DECIDUOUS	YELLOW; FEBRUARY	—	YELLOW	SMALL FRAGRANT FLOWERS; VIGOROUS	—	4' O.C.	YES	YES
ILEX VERTICULATA	WINTERBERRY	7-9'	DENSE	DECIDUOUS	INCONSPICUOUS	BRIGHT RED BERRIES; FALL	YELLOW	RED FRUITS APPEAR WHILE LEAVES STILL GREEN & REMAIN INTO WINTER; RUGGED; GROWS IN ANY SOIL	—	4' O.C.	YES	NO
JUNIPERUS CHINENSIS PFITZERIANA	PFITZER JUNIPER	6-8'	BROAD FLAT TOPPED PYRAMIDAL	EVERGREEN, NEEDLELIKE	—	BLUE BERRIES; FALL	—	PLEASING LIGHT FEATHERY YOUNG PLANTS; MANY VARIETIES OF SPECIES; NATURAL HABIT WIDE GROWTH; RECOMMENDED OVER NATIVE SHRUB, J. COMMUNIS	—	3-4' O.C.	NO	YES
KALMIA LATIFOLIA	MOUNTAIN LAUREL	15'	WIDE, BUSHY	EVERGREEN, 5" LEAVES	PINK & WHITE, LARGE; JUNE	—	—	LOVELY LATE BLOOMING SHRUB; GOOD FOR NATURALISTIC PLANTINGS IN WOODED AREAS & FOUNDATION PLANTINGS; GROWS IN SHADE; WITHSTANDS WET SOIL	CONTROL OF LEAF SPOT DISEASE	4' O.C.	YES	NO
KOLKWITZIA AMABILIS	BEAUTY-BUSH	8'	TALL, UPRIGHT, ARCHING	DECIDUOUS	PROFUSE; PINK; JUNE	BROWN, BRISTLY SEEDS	REDDISH	VIGOROUS GROWTH; ORNAMENTAL INTEREST ALL SEASONS	—	3' O.C.	NO	YES
LEUCOTHOE CATESBAEI	DROOPING LEUCOTHOE	4-6'	COMPACT GRACEFUL, ARCHING	SEMI-EVERGREEN	WHITE, WAXY, SMALL; JUNE	-	BRONZE	LUSTROUS DARK GREEN LEAVES SPRING & SUMMER, GOOD MIXED IN FOREGROUND EVERGREEN PLANTINGS	CUT OUT OLDER STEMS OCCASIONALLY	3' O.C,	NO	YES
LIGUSTRUM (VARIETIES)	PRIVET	6-12'	DENSE	DECIDUOUS OR SEMI-EVERGREEN	SMALL, WHITE; JUNE - JULY	BLUE OR BLACK BERRIES, FALL-WINTER	—	LENDS TO CLIPPING; VIGOROUS; GROWS IN ALMOST ANY SOIL; GROWS IN DRY SOIL & IN SHADY CONDITIONS; USEFUL AS A SCREEN, HEDGE & FOR FOUNDATION PLANTINGS	—	2-5' O.C.	NO	YES
LONICERA TATARICA (VARIETIES)	TATARIAN HONEYSUCKLE	7-9'	UPRIGHT & BUSHY	DECIDUOUS	WHITE TO DEEP PINK; MAY	RED BERRIES; JUNE	—	EASILY PROPAGATED; VIGOROUS GROWTH; GROWS IN ALMOST ANY SOIL; WITHSTANDS HEAVY PRUNING, WEALTH OF BLOOM ANNUALLY; BERRIES ATTRACTIVE TO BIRDS	—	6' O.C.	NO	YES
PIERIS FLORIBUNDA	MOUNTAIN ANDROMEDA	4-6'	UPRIGHT, FULL BRANCHING	EVERGREEN 3½" LEAVES	WHITE, 4" CLUSTERS, MAY	—	—	ONE OF MOST SERVICEABLE BROAD-LEAVED EVERGREENS IN N.E.; GROWS WELL IN ANY NORMAY SOIL	—	3' O.C.	NO	YES
RHAMNUS FRANGULA	ALDER BUCKTHORN	12-14'	DENSE	DECIDUOUS	—	RED-PURPLE BERRIES	YELLOW	VIGOROUS; LUSTROUS GREEN FOLIAGE; EASILY GROWN IN ANY SOIL; NUMEROUS BERRIES	—	6' O.C.	NO	YES
RHODODENDRON CATAWBIENSE (VARIETIES)	CATAWBA RHODODENDRON	6-12'	SPREADING & DENSE	EVERGREEN, 5" LEAVES	LILAC, ROSE, WHITE; JUNE	—	—	PROFUSE FLOWERS; MANY HYBRIDS; NOTED FOR THEIR HARDINESS AMONG RHODODENDRONS; LITTLE MAINTENANCE ONCE ESTABLISHED	ACID SOIL; SOME WINTER PROTECTION	4' O.C.	NO	NO
RHODODENDRON GANDAVENSE (VARIETIES)	GHENT AZALEA	4-8'	UPRIGHT, FULL	DECIDUOUS	WHITE, PINK, RED, YELLOW; MAY	-	-	COLOR OF PROFUSE FLOWERS UNSURPASSED BY ANY OTHER HARDY WOODEN SHRUB; MANY HYBRIDS; LITTLE MAINTENANCE	ACID SOIL	5' O.C.	NO	NO
RHUS AROMATICA	FRAGRANT SUMAC	3'	DENSE	DECIDUOUS	SMALL, YELLOW; MAY	SMALL RED BERRIES; SUMMER-FALL	YELLOW & SCARLET	CHIEFLY VALUED FALL INTEREST BRIGHT SPIKELIKE FRUITS & BRILLANT RED LEAVES; RAPID GROWTH; DOES WELL IN DRY SOIL; BEST IN NATURALIZED PLANTINGS	—	3' O.C.	YES	YES
ROSA MULTIFLORA	JAPANESE ROSE	8'	ARCHING, DENSE, SPINY	DECIDUOUS	SMALL WHITE CLUSTERS; JUNE	MANY RED BERRIES; FALL & WINTER	—	ONE OF MOST VIGOROUS OF ROSE SPECIES; PROFUSE FLOWERS; BERRIES WINTER FOOD FOR BIRDS; VIGOROUS; MATURE PLANT MAY BE 12' WIDE	—	5' O.C.	NO	YES
ROSA RUGOSA (VARIETIES)	RUGOSA ROSE	6'	DENSE	DECIDUOUS	PINK TO WHITE, JUNE	BRICK RED; FALL	ORANGE	GORGEOUS AUTUMN COLOR; LARGE CONSPICUOUS RED FRUITS; VIGOROUS; HARDY; THRIVES IN SALT WATER SPRAY	—	3' O.C.	NO	YES
SAMBUCUS CANADENSIS (VARIETIES)	AMERICAN ELDER	10'	SPREADING	DECIDUOUS	WHITE, SMALL CLUSTERS; JUNE	BLUE-BLACK BERRIES; LATE SUMMER	—	VIGOROUS; USE FOR LARGE PLANTINGS, NATURALIZING; DOES WELL IN MOIST WET SOILS; BERRIES FOOD FOR BIRDS	SOME PRUNING TO MAINTAIN VIGOROUS GROWTH	5' O.C.	YES	YES
SPIREA VANHOUTTEI	VANHOETTI SPIREA	6'	GRACEFUL, ARCHING	DECIDUOUS	MAY	DRIED SEED PODS;	ORANGE TO RED	PROFUSE FLOWERS; VIGOROUS GROWTH; NOT PARTICULAR TO SOIL & SITUATION; EASILY TRANSPLANTED	SOME PRUNING	2-3' O.C.	NO	NO
SYRINGA VULGARIS (VARIETIES)	COMMON LILAC	16'	DENSE, UPRIGHT	DECIDUOUS	WHITE, VIOLET, BLUE, LILAC, PINK, PURPLE	—	—	VALUED MOSTLY FOR ITS FRAGRANT FLOWERS; EASILY GROWN; VIGOROUS; GOOD SCREEN; INCREASES RAPIDLY WITH SUCKERS	LILAC SCALE NEEDS CONTROL BY SPRAYING; RENEWAL PRUNING	4' O.C.	NO	YES
TAXUS CUSPIDATA (VARIETIES)	JAPANESE YEW	4-25'	VARIES	EVERGREEN NARROW LEAF	-	RED FLESHY BERRIES; FALL	—	STRIKING DARK GREEN EVERGREEN SHRUB; WITHSTANDS CLIPPING & PRUNING; GOOD SCREEN OR HEDGE	—	3-6' O.C.	NO	YES
VIBURNUM (VARIETIES)	VIBURNUM	VARIES TO 30'	VARIES	DECIDUOUS	SMALL WHITE TO PINK	FLESHY DRUPE; RED, YELLOW, BLUE, OR BLACK	VIVID SHADES OF RED	STURDY; EASILY GROWN & MAINTAINED; VIGOROUS; GOOD SCREEN PLANT; MANY HAVE ORNAMENTAL INTEREST ALL SEASONS	—	3-6' O.C.	YES (SOME)	YES

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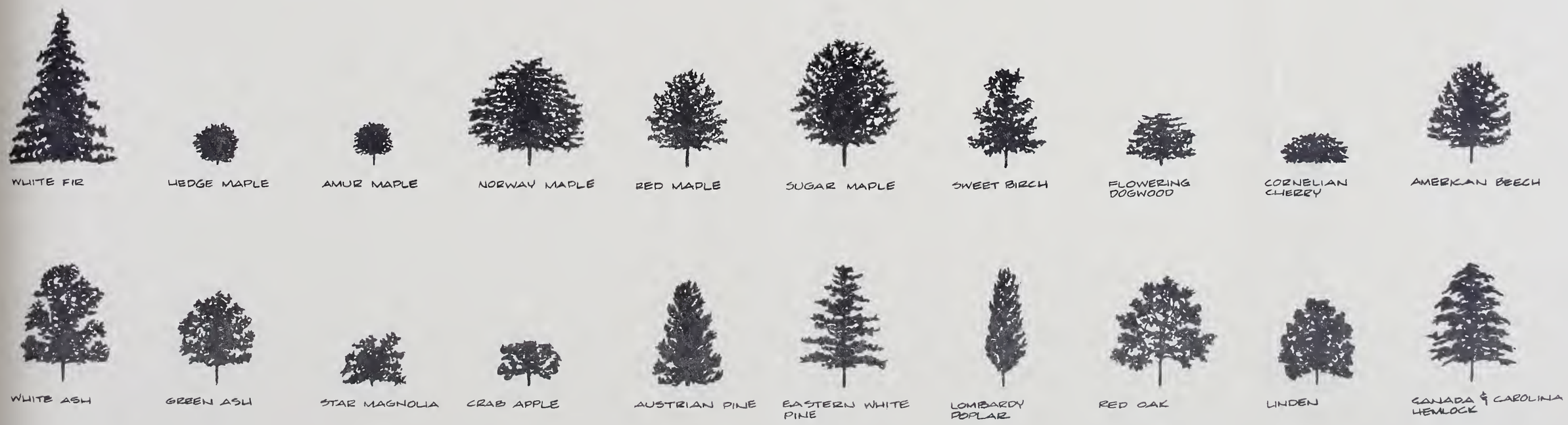
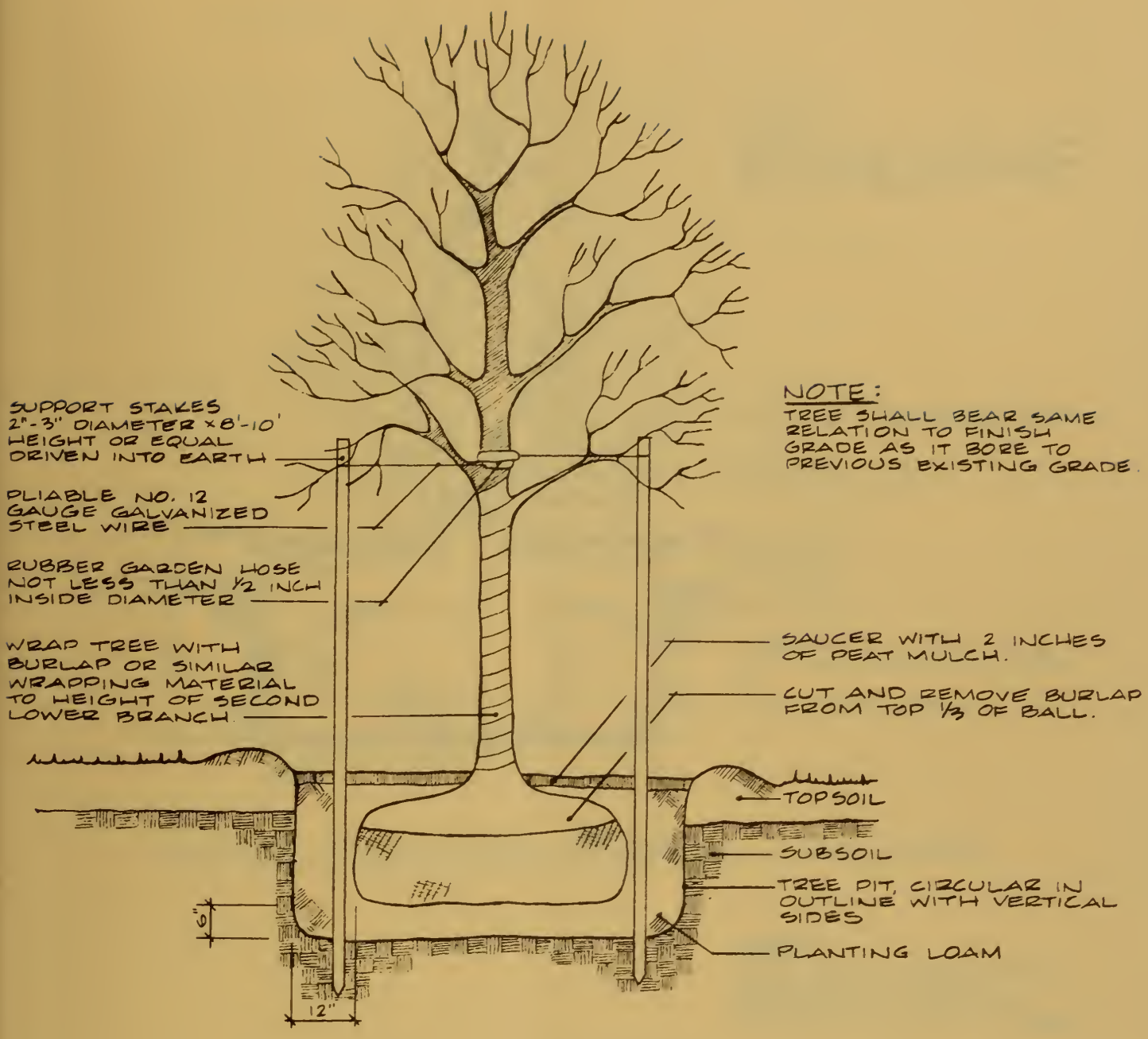
VINES

BOTANICAL NAME	COMMON NAME	LENGTH	FORM	FOLIAGE	FLOWERS	FRUIT - FOOD FOR WILDLIFE	AUTUMN COLOR	SPECIAL CHARACTERISTICS	SPECIAL CARE	REC. SPACING	NATIVE	CITY USE
HEDERA HELIX (VARIETIES)	ENGLISH IVY	TO 90'	CLINGING	EVERGREEN; 4" LONG LEAVES; 3-5 LOBED	–	BLACK BERRIES; FALL	–	EASY TO CULTIVATE; RAPID GROWTH, 4-8' A YEAR; USEFUL AS A GROUND COVER, AS A VINE TO CLIMB WALLS & FENCES; USEFUL FOR SCREENING; WITHSTANDS SHADE	–	12" O.C.	NO (HAS BECOME NATURALIZED)	YES
HYDRANGEA PETIOLARIS	CLIMBING HYDRANGEA	TO 75'	CLINGING	DECIDUOUS	WHITE; LARGE FLAT CLUSTERS; JUNE	–	–	EASY TO CULTIVATE; INTEREST IN WINTER WITH REDDISH SHREDDING BARK ON STEMS; USEFUL TO CLIMB TREE TRUNKS WITHOUT HARMING TREES & TO CLIMB BUILDING WALLS MAKING AN INTERESTING FORM; WITHSTANDS SHADE	–	2' O.C	NO	YES
LONICERA JAPONICA (VARIETIES)	HALLS HONEYSUCKLE	–	TWINING; DENSE	SEMI-EVERGREEN	WHITE, TRUMPET SHAPED; FRAGRAINT; JUNE	BLACK BERRIES; FALL	BRONZE	VIGOROUS EXOTIC VINE; RAPID GROWTH, 18-20' A YEAR; USEFUL AS A GROUND COVER & AS A VINE TO CLIMB BANKS & FENCES; ROOTS EASILY; GROWS IN ANY SOIL, IN SUN & SHADE	–	2-3' O.C.	NO (HAS BECOME NATURALIZED)	YES
PACHASANDRA TERMINALIS	JAPANESE SPURGE	–	GROUND COVER	EVERGREEN	SMALL WHITE SPIKES; MAY	WHITE BERRIES; FALL	–	VALUED EVERGREEN GROUND COVER; DARK GREEN LUSTROUS LEAVES, DOES WELL IN SHADE	–	12" O.C.	NO	YES
PARTHENOCISSUS QUINQUEFOLIA	VIRGINIA CREEPER	–	CLIMBING; OPEN	DECIDUOUS	–	BLUISH-BLACK BERRIES; FALL	BRILLANT RED	EASY TO CULTIVATE; RAPID GROWTH, 6-10' A YEAR; NOTED FOR COLORFUL FRUITS & VIVID SCARLET FALL COLOR; USEFUL AS A GROUND COVER & AS A VINE TO CLIMB WALLS & FENCES; WITHSTANDS SHADE & DRY CONDITIONS	–	3' O.C.	NO	YES
PARTHENOCISSUS TRICUSPIDATA	BOSTON IVY	TO 60'	CLINGING	DECIDUOUS	–	BLUISH-BLACK BERRIES; FALL	SCARLET	EASY TO CULTIVATE; RAPID GROWTH, 6-10' A YEAR; AN EXCELLENT VINE FOR CLINGING TO STONEWORK & CLIMBING BUILDING WALLS; WITHSTANDS SHADE & DRY CONDITIONS	–	3' O.C	NO	YES
VINCA MINOR (VARIETIES)	PERIWINKE OR MYRTLE	–	GROUND COVER	EVERGREEN	LILAC-BLUE; VARIETIES: WHITE, LIGHT BLUE, PURPLE	–	–	VALUED EVERGREEN GROUND COVER, DARK GREEN LUSTROUS LEAVES; DOES WELL IN SUN & SHADE & IN POOR SOIL, INCREASES RAPIDLY; GOOD FOR BANK PLANTING TO RETAIN SOIL		12" O.C.	NO	YES
VITUS (VARIETIES)	GRAPE VINES		CLINGING	DECIDUOUS		GRAPES VARIOUS COLORS; FALL	RED	RAPID GROWTH TO 30' A YEAR; USEFUL CHIEFLY AS A RAPID GROWING SCREEN; CLINGS READILY TO FENCES; WITHSTANDS SHADE	SHOULD NOT BE USED WHERE JAPANESE BEETLES ARE; PRUNE TO RESTRAIN VINES	5' O.C	YES	NO

SILHOUETTES OF RECOMMENDED TREES

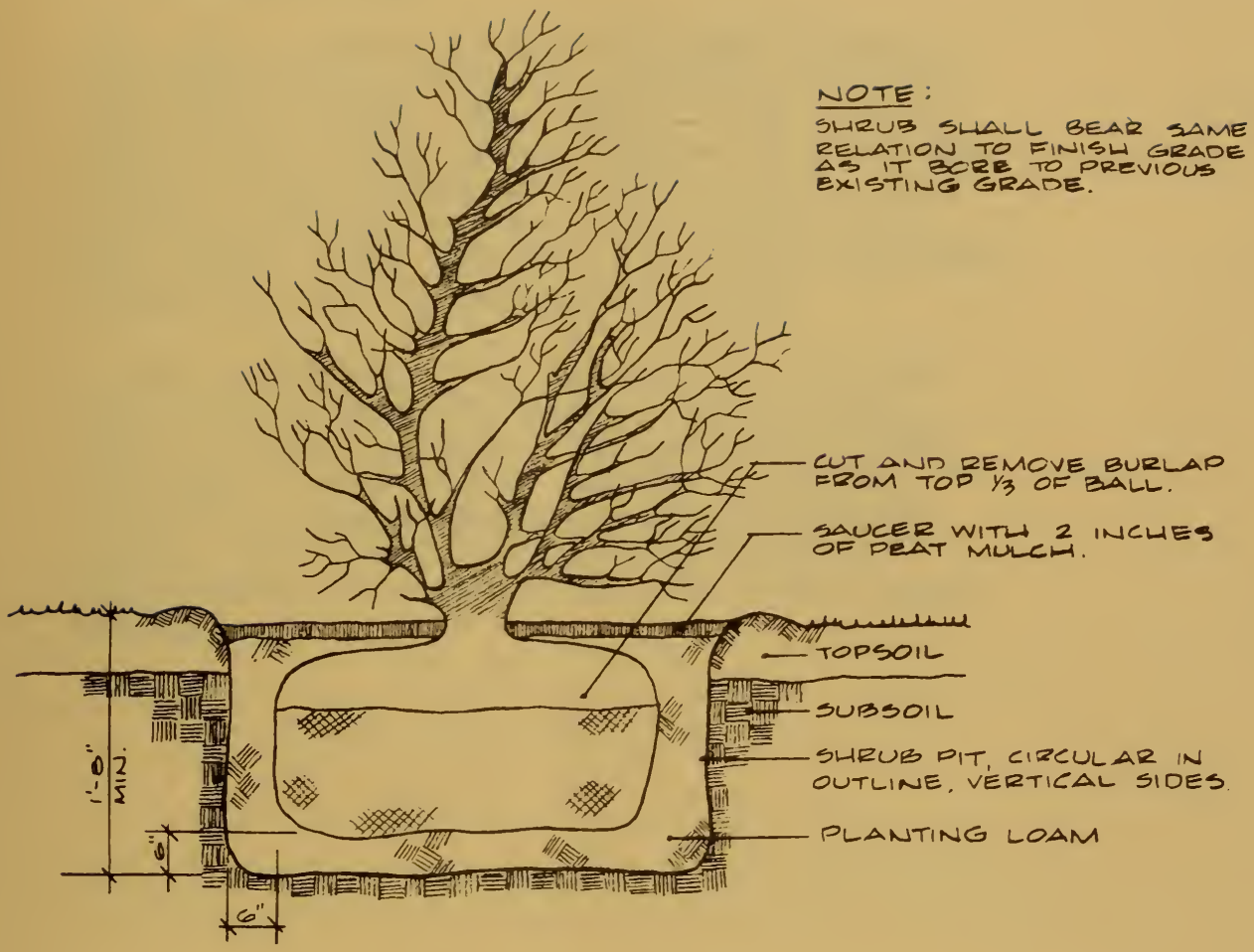




TREE PLANTING DETAIL

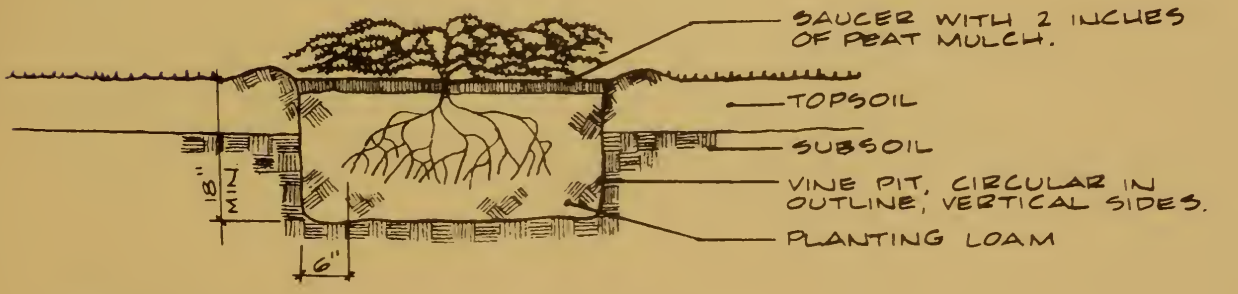
NO SCALE

NOTE:
SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE TO PREVIOUS EXISTING GRADE.



SHRUB PLANTING DETAIL NO SCALE

NOTE:
VINE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE TO PREVIOUS EXISTING GRADE.



VINE PLANTING DETAIL NO SCALE

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D. INTERCEPTOR USE

The slight gradient of the interceptor makes the right-of-way especially suitable for hiking and bicycle riding. The design of the interceptor right-of-way should enhance the potential for this recreational use. This could be accomplished by shaping the berm flat enough for a path, with a width adequate and a paving material suitable for hiking and bicycle riding.

In many communities, the easement for the pipeline has been acquired without acquiring the right of public passage. This practice, while necessary in some cases, severely limits the potential of developing a community-wide path system. The Council highly recommends the acquisition of a right-of-way that allows public passage.

IV. LEGISLATION

A. INTRODUCTION

There are a number of legal measures that may be relevant to the construction of water pollution control plants that are sited adjacent to a body of water. Salt marshes, great meadows and other wetlands, in their natural state, are critical to the quality of the metropolitan environment. Thoughtless building practices increase the danger of flood damage by reducing the watershed's ability to absorb storm water. Coastal and inland wetlands provide a rich and varied biological environment of great economic and ecological importance. Filling of wetlands can affect the ground water table and aggravate the problem of water supply, and it can diminish a stream's ability to sustain a flow during the dry season sufficient to carry off pollutants.

In response to these critical areas of public concern, a wide variety of police power regulations is now being employed by both state and local governments to regulate the use of wetlands.

For a complete discussion of all open space laws in Massachusetts, see Open Space and Recreation Plan and Program for Metropolitan Boston, Volume IV by the M.A.P.C.

B. REGULATION OF WETLANDS BY THE STATE

The following is a brief discussion of state laws most relevant to construction adjacent to or in wetland areas:

The Hatch Act of 1965, or Inland Dredge and Fill Law. This Act requires s developer to file before filling or excavating inland wetlands or flood plains. The Department of Public Works (DPW) prevents channel encroachments, etc. on certain streams, and the Department of Natural Resources (DNR) imposes conditions on work to protect water supply and ensure proper flood control.

The Coastal Dredge and Fill Law of 1963 (Jones Law). This Law is similar to the Hatch Act but applies to coastal wetlands. The DPW protects navigability, licenses the use of public tidelands, and prevents destruction of natural storm barriers. The DNR's Marine Fisheries Division imposes conditions on the work to protect shellfish and marine fisheries.

The Coastal Wetlands Act of 1965. For fisheries and wildlife protection, pollution control, and other public purposes, the DNR can adopt and record "police power" orders and plans which limit the uses permitted on designated coastal wetland and adjacent upland. There is an appeal procedure and potential use of eminent domain.

The Inland Wetlands Act of 1968. To protect floodplains, water resources, public health and safety, etc., the DNR can record an order, after public hearing, which limits the uses permitted on designated inland wetlands.

The major purposes of these state laws are to provide flood control and protection of natural resources. For the purpose of this discussion the flood plain, or that land in need of protection, is the area adjoining a river or stream which has been or may hereafter be, covered by flood water. Any encroachment on the flood plain increases the extent and severity of flooding elsewhere. Thus an important consideration in plant location and design is the potential effect on the floodplains of the construction and operation of the facility.

C. REGULATION OF WETLANDS BY LOCAL GOVERNMENTS

The following is a brief discussion of local laws relevant to construction adjacent to or in wetland areas:

Floodplain Zoning. A town may create a floodplain

zone within the town's zoning ordinance. Such a zone provides that lands subject to seasonal or periodic flooding shall not be used in such a manner as to endanger the occupants thereof or others.

Conservancy District Zoning. A town may also establish a conservancy zone. In this zone, development can be allowed only if the applicant can prove to the Board of Appeals that it will not adversely affect the preservation and maintenance of the ground-water table; the protection of the community from costs which may be incurred when unsuitable development occurs in wetlands or floodplains; the preservation and encouragement of the town's amenities; and the conservation of natural conditions, wildlife and open spaces for education, recreation and the general welfare.

Watershed Protection District. This district is designed to preserve the natural flood water storage capacity and the natural stream flow of an entire watershed. For this purpose it prohibits building, dumping, filling, excavating, or otherwise altering the natural flow pattern in any way that would increase the rate of run-off or decrease natural storage capacity of a river and its tributaries.

V. MAPC A--95 REVIEW*

In reviewing the proposed treatment plant the MAPC staff will consider the elements listed below.

A. POLICY EVALUATION

The extent to which the project is consistent with or contributes to the fulfillment of comprehensive planning as expressed in local and Council plans.

The extent to which the project contributes to the achievement of State, regional, metropolitan or local objectives.

B. PROJECT EVALUATION

Check the proposal against the:

MAPC Projected Needs Report
MAPC Alternative Regional Water Systems Report
MAPC Alternative Sewage Systems Report
Town Master Plans
Town Zoning Regulations
MAPC Open Space Report
MAPC Solid Waste Report

Inquire of local officials from adjacent towns, the Department of Natural Resources and Division of Water Pollution Control.

Check population served, industrial and commercial growth prospects, disposition of sludge, plant landscaping of interceptors, and access to interceptor route for use as hiking trail and bicycle path.

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* The U.S. Office of Management and Budget Circular A-95 established a national system of state and regional clearinghouses to provide improved coordination and administration of Federal grants-in-aid. This is to assure that there is coordination of federally funded projects with state and local plans. The MAPC serves as the regional clearinghouse for its 101 member communities. The procedure to be followed by the applicant is available from the state Office of Planning and Program Coordination (OPPC).

C. ENVIRONMENTAL IMPACT STATEMENT

Under existing regulations, the Federal Environmental Protection Agency requires that an Environmental Impact Statement be prepared on all Federal projects that significantly affect the quality of the human environment.

The MAPC recommends that such statements be made by the consulting engineer for the sewer treatment plant facilities discussed in this report, and that the statements be presented to the planning board of the contracting community.

Section 102 of the National Environmental Policy Act of 1969 stated that such an environmental statement assess:

1. The envrionmental impact of the proposed action,

2. Any adverse environmental affects which cannot be avoided should the proposal be implemented,

3. Alternatives to the proposed action,

4. The relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

5. Any irreversible or irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

VI. BIBLIOGRAPHY FOR PLANT MATERIAL SELECTION

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Familiar Trees of America	William C. Grimm	Harper Row
Field Guide to Trees and Shrubs	George A. Petrides	Hougton Mifflin
Manual of the Trees of North America	Charles S. Sargent	Dover Books
Recognizing Native Shrubs	William C. Grimm	Stackpole Books
Shrub Identification Book	George W. Symonds	Barrows and Co.
Tree Identification Book	George W. Symonds	Barrows and Co.
Trees	Andreas Feininger	Viking
LANDSCAPE USE OF PLANTS		
Art of Home Landscaping	Garrett Eckbo	McGraw Hill
Gardening in the East	Stanley Schuler	Macmillan Company
Ground Cover Plants	Donald Wyman	Macmillan Company
Saturday Morning Gardener	Donald Wyman	Macmillan Company
Shrubs and Vines for American Gardens	Donald Wyman	Macmillan Company
Sunset Books: Landscaping Book Lawns and Ground Covers	----------	Sunset Magazine and Books; Lané Publishing Co.

Trees for American Gardens	Donald Wyman	Macmillan Company
Trees for Architecture and the Landscape	Robert Zion	Van N. Reinhold

MAINTENANCE OF PLANTS

Taylor's Encyclopedia of Gardening	----------	Houghton Mifflin
Tree Maintenance	Pirone	Oxford University Press
Wise Garden Encyclopedia	----------	Grosset & Dunlap
Wyman's Gardening Encyclopedia	Donald Wyman	Macmillan Company

PLANTING SPECIFICATIONS

Recommended Standard Specifications for Planting Trees, Shrubs, and Vines	----------	Associated Landscape Contractors of Massachusetts, Inc.

*Those pages with * were adapted from: Siting & Design of Municipal Treatment Plants. Hudson River Valley Commission, Tarrytown, New York. March, 1970.

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   No. 3 - Land and Water Conservation Fund Program, November 1966
   No. 4 - Massachusetts Conservation "Self-Help" Act, November, 1966

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c. Site Selection Manual, April 1970
d. Formation of a Public Housing Authority, July 1970
e. Questions on non-profit program, Dec. 1970
f. General program description, Jan. 1971
g. Chapter 774 - An Intrepretive Analysis, Dec. 1969

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(3) Alternative Regional Water Supply Systems for the Boston Metropolitan Area, February, 1971.

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